14

INDIA'S FOOD PROBLEM

TATTVA PRACHAR CENTRE
BANGALORE

Gandhi Smarak Nidhi
Karnatak Shakha
138, NEHRU CIRCLE
BANGALORE-3.

BY

M. K. GANDHI

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Compiled by

R. K. PRABHU

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CHAPTER 1

WHERE INDIA LIVES

I have believed and repeated times without number that India is to be found not in its few cities but in its 700,000 villages. But we town-dwellers have believed that India is to be found in its towns and the villages were created to minister to our needs. We have hardly ever paused to inquire if those poor folks get sufficient to eat and clothe themselves with and whether they have a roof to shelter themselves from sun and rain.

Harijan, 4-4-1936, p. 63

The only question that a lover of India and humanity has to address himself to is how best to devise practical means of alleviating India's wretchedness and misery. No scheme of irrigation or other agricultural improvement that human ingenuity can conceive can deal with the vastly scattered population of India or provide work for masses of mankind who are constantly thrown out of employment. Imagine a nation working only five hours per day on an average, and this not by choice but by force of circumstance, and you have a realistic picture of India.

If the reader would visualize the picture, he must dismiss from his mind the busy fuss of the city life or the grinding fatigue of the factory life or the slavery of the plantations. These are but drops in the ocean of Indian humanity. If he would visualize the picture of the Indian skeleton, he must think of the eighty per cent of the population which is working its own fields and which has practically no occupation for at least four months in the year and which, therefore, lives on the borderland of starvation. This is the normal condition. The ever recurring famines make a large addition to this enforced idleness.

Young India, 3-11-1921, p. 350

We have got to be ideal villagers, not the villagers with their queer ideas, or absence of ideas, about sanitation and giving no thought to how they eat and what they eat. Let us not, like most of them, cook anyhow, eat anyhow, live anyhow. Let us show them the ideal diet. Let us not go by mere likes and dislikes, but get at the root of those likes and dislikes.

Harijan, 1-3-1935, p. 21

My idea of village Swaraj is that it is a complete republic, independent of its neighbours for its own vital wants, and yet interdependent for many others in which dependence is a necessity. Thus every village's first concern will be to grow its own food crops and cotton for its cloth. It should have a reserve for its cattle, recreation and playground for adults and children. Then if there is more land available, it will grow *useful* money crops, thus excluding *ganja*, tobacco, opium and the like. The village will maintain a village theatre, school and public hall. It will have its own waterworks ensuring clean water supply. This can be done through controlled wells or tanks. Education will be compulsory up to the final basic course. As far as possible every activity will be conducted on the co-operative basis.

Harijan, 26-7-1942, p. 238

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CHAPTER 2

WHY IS INDIA IN WANT OF FOOD?

Q. India at the present time cannot grow enough food for its population. To buy food from abroad, India must sell other goods to pay for it, and in order to sell such goods, India must produce at competitive prices which, in my opinion, cannot be done without modern machines. How can this be done, unless the machine replaces manual labour?

A. The statement in the first sentence of the question is wholly wrong. I hold, in spite of opinions expressed to the contrary, that India is able at the present moment to grow enough food. I have previously stated the condition for growing enough food, viz., that the Government at the head should be National and a Government that knows its business and is capable of dealing sternly with all profiteering, black-marketing and, worst of all, laziness of mind and body.

The second part of the question really falls to the ground if my answer to the first is correct. But for the sake of dismissing the plea on behalf of modern machines as against human labour of which there is plenty in a land like India, I would say that if all the able-bodied millions work with one mind and with zeal, they could compete on their own terms with any nation, however well-equipped it may be with modern machines. The questioner should not forget that modern machines have up till now gone side by side with the exploitation of the machineless nations, dubbed weak. I use the participle " dubbed " because they will refuse to be weak, immediately they realize the fact that they are even at the present moment stronger than the nation equipped with the most modern weapons and machinery.

Harijan, 18-8-1946, p. 265

Relying on outside help will make us still more dependent. If, however, without relying on them, we do get imports of foodstuffs, we shall gratefully accept and make the best use of them. While it is the duty of the Government to try to get food from outside, I do not think it is good for us to look either to them or to other countries. What is more, disappointment from that direction will be positively harmful for the morale of our people in these hard times. But if the people become united and determined to look to none save God for help and do not oppose such Governmental measures as they find useful, there will be no cause for disappointment. Such action will enable the people to emerge stronger from the ordeal and foreign countries will think of their duty to send us food of their own accord wherever they can spare it. God helps those who help themselves. How can others withhold help from the self-reliant?

Harijan, 24-2-1946, p. 22

CHAPTER 3

PROBLEM OF FOOD SHORTAGE

[At the invitation of Dr. Rajendra Prasad, President of the Indian Republic, a number of Indian leaders met in Delhi in October 1947 to give him the benefit of their advice on the grave food crisis that confronted the country at the time. Referring to the prevailing situation Gandhiji made the following observations at his prayer gathering:]

India is not unfamiliar with starvation and death of tens of thousands, if not millions, due to famine, natural or man-made. I claim that in a well-ordered society there should be always pre-arranged methods of successful treatment of scarcity of water and food crops. This is, however, not the occasion for describing a well-ordered society and for showing how it would deal with the matter. Our concern, for the present, is to see whether we can, with fair hope of success, deal with the present food crisis.

I think we can. The first lesson we must learn is of self-help and self-reliance. If we assimilate this lesson, we shall at once free ourselves from disastrous dependence upon foreign countries and ultimate bankruptcy. This is not said in arrogance but as a matter of fact. We are not a small place, dependent for its food supply upon outside help. We are a sub-continent, a nation of nearly 400 millions. We are a country of mighty rivers and a rich variety of agricultural land, with inexhaustible cattle-wealth. That our cattle give much less milk than we need is entirely our own fault. Our cattle-wealth is any day capable of giving us all milk we need. Our country, if it had not been neglected during the past few centuries, should today not only be providing herself with sufficient food, but also be playing a useful role in supplying the outside world with much-needed foodstuffs of which the late war has unfortunately left practically the whole world in want. This does not exclude India. The distress is growing instead of showing signs of decreasing. My suggestion does not include ungrateful rejection of free supply that any foreign country may wish to offer us. All I say is that we must not go a-begging. It demoralizes. Add to this the difficulty of internal transport of foodstuffs from one place to another. We have not the requisite facility for rapid movement of grains and other foodstuffs from place to place. Further add not the remote possibility of delivery of uneatable stuff. We dare not lose sight of the fact that we have to deal with human nature. In no part of the world it is to be found perfect or even very nearly so.

Meaning of Foreign Aid

Next, let us see what possible foreign aid we can get. I am told, not more than three per cent of our present wants. If this information is correct and I have had it checked by several experts who confirm the figure, I am sure the case for reliance on outside help falls to the ground. The slightest dependence on outside help is likely to deflect us from trying to the fullest extent our immense internal possibilities in the shape of utilizing every inch of arable land for growing crops for daily food in the place of growing money crops We must reclaim waste land which is capable of being placed under immediate cultivation.

Centralization of foodstuffs, I apprehend, is ruinous Decentralization easily deals a blow to black-marketing saves time and money in transport to and fro. Moreover, the villager who grows India's cereals and pulses knows how to save his crops against rodents. The movement of grain from station to station makes it liable to be eaten by rodents. This costs the country many millions and deprives it of tons of grain, every ounce of which we badly need. If every Indian were to realize the necessity of growing food wherever it can be grown, we should most probably forget that there was scarcity of foodstuffs in the land. I have by no means dealt fully with the fascinating and absorbing subject of growing more food, but I hope I have said enough to stimulate interest and turn the wise towards the thought of how every individual can help in the laudable enterprise.

How to Deal with Shortage

Let me now show how to deal with the three per cent of grains we might possibly get from outside. Hindus observe a fast or a semi-fast every eleventh day per fortnight. Muslims and others are not prohibited from denying themselves especially when it is for the sake of the starving millions. If the whole nation realized the beauty of this partial self-denial, India would more than cover the deficit caused by the voluntary deprivation of foreign aid.

Personally I hold that rationing has very limited use if any. If the producers were left to themselves, they would bring their produce to the market and everyone would get good and eatable grain, which today is not easily obtainable.

President Truman's Advice

I shall close this hurried review of the food crisis by drawing attention to President Truman's reported advice to the American people that they should eat less bread, and thus save the much-needed grain for starving Europe. He added that Americans would not lose in health by the recommended act of self-denial. I tender my congratulations to President Truman on this philanthropic gesture. I must decline to endorse the suggestion that at the back of this philanthropy there is the sordid motive of deriving a pecuniary advantage for America. A man must be judged by his action, not the motive prompting it. God alone knows men's hearts. If America would deny herself for the sake of hungry Europe, should we fail to do this little act of self-denial for ourselves? If many must die of starvation let us at least earn the credit of having done our best in the way of self-help which ennobles a nation.

Harijan, 19-10-1947, pp. 376-77

CHAPTER 4

CONTROL BREEDS EVIL

Control gives rise to fraud, suppression of truth, intensification of the black-market and to artificial scarcity. Above all it unmans the people and deprives them of initiative, it undoes the teaching of self-help they have been learning for a generation. It makes them spoon-fed. This is a tragedy next only, if indeed not equal, to the fratricide on a vast scale and the insane exchange of population resulting in unnecessary deaths, starvation and want of proper residence and clothing more poignant for the coming inclement weather. The second is certainly more spectacular. We dare not forget the first because it is not spectacular.

This food control is one of the vicious legacies of the last world war. Control then was probably inevitable because a very large quantity of cereals and other foodstuff were exported outside. This unnatural export was bound to create a man-made scarcity and lead to rationing in spite of its many drawbacks. Now there need be no export which we cannot avoid if we wish to. We would help the starving parts of the world, if we do not expect outside help for India in the way of food.

I have seen during my lifetime covering two generations several God-sent famines, but have no recollection of an occasion when rationing was even thought of.

Today, thank God, the monsoons have not failed us. There is, therefore, no real scarcity of food. There are enough cereals, pulses and oil seeds in the villages of India. The artificial control of prices, the growers do not, cannot understand. They, therefore, refuse willingly to part with their stock at a price much lower than they command in the open market. This naked fact needs no demonstration. It does not require statistics or desk-work civilians buried in their red-tape files to produce elaborate reports and essays to prove that there is scarcity. It is to be hoped that no one will frighten us by trotting out before us the bogey of over-population.

Our ministers are of the people, from the people. Let them not arrogate to themselves greater knowledge than those experienced men who do not happen to occupy ministerial chairs — but who hold the view strongly that the sooner the control is removed the better. A physician writes to say that the food control has made it impossible for those who depend upon rationed food to procure eatable cereals and pulses and, therefore, he says, the people needlessly suffer from ailments caused by rotten stuff.

In the place of controlled food, the Government can easily run the very stores for selling good grains which they will buy in the open market. They will thus bring about automatic regulation of prices and set free the hoarded cereals, pulses and oil seeds. Will they not trust the grain dealers and growers? Democracy will break under the strain of apron strings. It can exist only on trust. If the people die because they will not labour or because they will defraud one another, it will be a welcome deliverance. The rest will then learn not to repeat the sin of being lazy, idle or cruelly selfish.

Harijan, 16-11-1947, p. 409

CHAPTER 5

MEANING OF DECONTROL

Keep a child in cotton wool and stunt it or kill it. If you will let it develop into a robust man, you will expose his body to all weathers, teaching him how to defy them. Precisely in the same manner, a government worth the name has to show the nation how to face deficits, bad weathers and other handicaps of life through its own collective effort instead of its being effortlessly helped to live anyhow.

Thus considered decontrol means that the business of foresight is transferred from the few members of the Government to the millions composing the nation. The Government will have new tasks to perform towards the nation so as to enable it to discharge the duty devolved upon it. Methods of transport have to be put in order, and those of growing more food have to be brought home to the people and to that end the agricultural department has to learn how to serve the small grower rather than the capitalist grower. The Government has on the one hand to trust all arms of the nation as well as to watch and check their movement, regard being had always to the interest hitherto neglected of the small grower, who represents the largest majority of the millions. He is the consumer of his own crops reserving a small percentage for the mere consumer who, in exchange for the foodstuffs he gets, gives cash for buying the other necessaries of life. Control has meant less payment to the grower than he would otherwise command from the open market. Hence, to the extent that he gets a higher price, the prices of food must rise. These, the consumer will not grudge. The Government has to see that in the new set up the whole of the percentage in the rise of prices goes to the grower. This has to be made clear to the public from day to day or week to week as the case may be. The wealthy factory owners or middlemen have to work in co-operation with and in subordination to the Government. I understand that the process is going on. There should be perfect co-ordination among these few men or corporations who have hitherto exploited the poor for their selfish purpose and have not hesitated to enter into unhealthy rivalry among themselves. This has to go especially in the case of food and cloth where the profit motive is to be wholly absent. Any successful attempt at adding to their profit owing to decontrol will defeat its purpose. Let us hope that these moneyed interests will rise to the occasion.

Harijan, 21-12-1947, p. 477

Personally, the bogey of the shooting up of prices by reason of decontrol does not frighten me. If we have many sharks and we do not know how to combat them, we shall deserve to be eaten up by them. Then we shall know how to carry ourselves in the teeth of adversity. Real democracy people learn not from books, nor from the Government who are in name and in reality their servants. Hard experience is the most efficient teacher in democracy.

Harijan, 18-1-1948, p. 516

CHAPTER 6

IN TIMES OF SCARCITY

[The following advice tendered by Gandhiji to his countrymen when there was widespread scarcity of foodstuffs in India during the last War has its value in the present condition of the country, which is obliged still to import millions of tons of essential foodstuffs:]

He who saves gains as much, that is to say, he produces as much. Hence those who feel for the poor, those who would be one with them must curtail their wants. There are many ways. I shall only mention some here. There is much, too much food eaten and wasted by the well-to-do.

Use one grain at a time. *Chapati*, rice and pulses, milk, ghee, *gur*, and oil are used in ordinary households besides vegetables and fruit. I regard this as an unhealthy combination. Those who get animal protein in the shape of milk, cheese, eggs or meat need not use pulses at all. The poor people get only vegetable protein. If the well-to-do give up pulses and oils, they set free these two essentials for the poor who get neither animal protein nor animal fat. Then the grain eaten should not be sloppy. Half the quantity suffices when it is eaten dry and not dipped in any gravy. It is well to eat it with raw salads such as onion, carrot, radish, salad leaves, tomatoes. An ounce or two of salads serves the purpose of eight ounces of cooked vegetables. *Chapatis* or bread should not be eaten with milk. To begin with, one meal may be raw vegetables and *chapati* or bread, and the other cooked vegetables with milk or curds.

Sweet dishes should be eliminated altogether. Instead *gur* or sugar in small quantities may be taken with milk or bread or by itself.

Fresh fruit is good to eat, but only a little is necessary to give tone to the system. It is an expensive article, and an over-indulgence by the well-to-do has deprived the poor and the ailing of an article which they need much more than the well-to-do.

Any medical man who has studied the science of dietetics will certify that what I have suggested can do no harm to the body, on the contrary it must conduce to better health.

This is only one way of saving foodstuff. It is obvious. But by itself it cannot produce much visible effect.

Grain-dealers have to shed their greed and the habit of making as much profit as possible. They must be satisfied with as little as possible. They run the risk of being looted, if they do not gain the credit of being keepers of grain for the sake of the poor. They should be in touch with the people in their neighbourhood.

By far the most important part of the work consists in educating the villagers to keep what they have and to induce cultivation of fresh crops wherever water is available. This requires widespread and intelligent propaganda. It is not generally known that bananas, potatoes, beetroot, yam and *suran*, and in a measure pumpkin are a food crop easily grown. They can take the place of bread in time of need.

There is too scarcity of money. There may be grain available but no money to buy it with. There is no money because there is no employment. This has to be found. Spinning is the readiest and the handiest. But local needs may supply other sources of labour. Every available source has to be tapped so that there is no want of employment. Only the lazy ones need and must starve. Patient handling will induce even this class to shed their laziness.

Harijan, 25-1-1942, p. 12

[When even after the cessation of the War the food crisis persisted, Gandhiji wrote again as under:]

Food crisis should be regarded as a certainty. In the circumstances the following things should be attended to at once:

1. Every person should confine his daily wants regarding food to the minimum, consistent with his or her health requirements; and where, as in cities, milk, vegetables, oil and fruit are available, grains and pulses should be reduced as they easily can be. Starch can be derived from starchy roots such as carrots, parsnips, potatoes, yam, bananas; the idea being to exclude from present diet and conserve those grains and pulses which can be kept and stored. Vegetables too should not be eaten as an indulgence or for pleasure, when millions are denied the use of these things altogether and are now threatened with starvation due to shortage of cereals and pulses.

2. Everyone who has access to any water should try himself or herself to grow some edible for personal or general use. The easiest way to do so is to collect clean earth, mix it with organic manure where possible—even a little bit of dried cowdung is good organic manure—and put it in any earthen or tin pot and throw some

seeds of vegetables such as mustard and cress etc. and daily water the pots. They will be surprised how quickly the seeds sprout and give edible leaves which need not even be cooked but can be eaten in the form of salad.

3. All flower gardens should be utilized for growing edibles. And in this connection I would suggest to the Viceroy, Governors and high officials to take the lead. I would ask the heads of agricultural departments at the Centre and Provinces to flood the country with leaflets in the provincial languages telling laymen how and what to grow easily.

4. Reduction should be taken up not merely by the civilian population but equally, if not predominantly, by the military. I say predominantly, for the military ranks being under rigid military discipline can easily carry out measures of economy.

5. All exports of seeds, such as oil seeds, oils, oil cakes, nuts, etc., should be stopped, if they have not been already. Oil cakes, if the seeds are sifted of earth and foreign matter, are good human food with rich protein content.

6. Deep wells should be sunk by the Government wherever possible and required, whether for irrigation or for drinking purposes.

7. Given hearty co-operation by Government servants and the general public, I have not the slightest doubt that the country can tide over the difficulty. Just as panic is the surest way to defeat, so also will be the case when there is widespread distress impending and prompt action is not taken. Let us not think of the cause of the distress. Whatever the cause, the fact is that if the Government and the public do not approach the

crisis patiently and courageously, disaster is a certainty.

8. Above all, black-marketing and dishonesty should disappear altogether and willing co-operation between all parties should be the order of the day in so far as this crisis is concerned.

Harijan, 24-2-1946, p. 19

CHAPTER 7

CO-OPERATIVE EFFORT IN FARMING

Sjt. Kelappan came to see me two days ago and informed me that co-operative movement was going strong and had become very popular in Kerala. If the societies are sound, it was heartening news that Sjt. Kelappan gave me. I, however, expressed my serious doubts. The secret of successful co-operative effort is that the members must be honest and know the great merit of co-operation and it must have a definite progressive goal. Thus holding a certain sum of money in co-operation for the sake of making more money by charging exorbitant rates of interest is a bad goal. But co-operative farming or dairying is undoubtedly a good goal promoting national interests. Such instances can be multiplied. I wonder what these numerous Kerala societies are. Have they honest inspectors who know their work? It may be mentioned that such movements have often proved disastrous when management has been dishonest and the goal questionable.

Harijan, 6-10-1946, p. 344

Q.: At Keroa (in Noakhali) you advised peasants to work co-operatively in their fields. Should they pool together their land and divide the crop in proportion to the area of the fields they held? Would you give us an outline of the idea of how exactly they are to work in a co-operative manner?

A.: Gandhiji said that the question was good and admitted of a simple answer. His notion of co-operation was that the land would be held in co-operation by the owners and tilled and cultivated also in co-operation. This would cause a saving of labour, capital, tools, etc. The owners would work in co-operation and own capital, tools, animals, seeds, etc. in co-operation. *Co-operative farming of his conception would change the face of the land and banish poverty and idleness from their midst. All this was only possible if people became friends of one another and as one family. When that happy event took place there would be no ugly sore in the form of a communal problem.* (Italics mine. — Ed.)

Harijan, 9-3-1947, p. 59

Q.: Some women workers who earn part of their living by weaving mats were advised by you the other day to work on co-operative principles. Bengal's agriculture has been reduced to an uneconomic proposition through extreme fragmentation of holdings. Would you advise farmers also to adopt co-operative methods?

If so, how are they to effect this under the present system of land-ownership? Should the State make the necessary changes in the law? If the State is not ready, but the people so desire, how are they to work through their own organizations to this end?

A.: Replying to the first part of the question, Gandhiji said that he had no doubt that the system of co-operation was far more necessary for the agriculturists than for the mat-weavers. The land, as he maintained, belonged to the State; therefore, it yielded the largest return when it was worked co-operatively.

Let it be remembered that co-operation should be based on strict non-violence. There was no such thing as success of violent co-operation. Hitler was a forcible example of the latter. He also talked vainly of co-operation which was forced upon the people and everyone knew where Germany had been led as a result.

Gandhiji concluded by saying that it would be a sad thing if India also tried to build up the new society based on co-operation by means of violence. Good brought about through force destroyed individuality. Only when the change was effected through the persuasive power of non-violent non-co-operation, i.e. love, could the foundation of individuality be preserved and real, abiding progress be assured for the world.

Harijan, 9-3-1947, p. 58

CHAPTER 8

COLLECTIVE CATTLE FARMING

It is quite impossible for an individual farmer to look after the welfare of his cattle in his own home in a proper and scientific manner. Amongst other causes lack of collective effort has been a principal cause of the deterioration of the cow and hence of cattle in general.

The world today is moving towards the ideal of collective or co-operative effort in every department of life. Much in this line has been and is being accomplished. It has come into our country also, but in such a distorted form that our poor have not been able to reap its benefits. *Pari passu* with the increase in our population land holdings of the average farmer are daily decreasing. Moreover, what the individual possesses is often fragmentary. For such farmers to keep cattle in their homes is a suicidal policy; and yet this is their condition today. Those who give the first place to economics and pay scant attention to religious, ethical or humanitarian considerations proclaim from the house-tops that the farmer is being devoured by his cattle due to the cost of their feed which is out of all proportion to what they yield. They say it is folly not to slaughter wholesale all useless animals.

What then should be done by humanitarians is the question. The answer obviously is to find a way whereby we may not only save the lives of our cattle but also see that they do not become a burden. I am sure that co-operative effort can help us in a large measure.

The following comparison may be helpful:

(1) Under the collective system no farmer can keep cattle in his house as he does today. They foul the air, and dirty the surroundings. There is neither intelligence nor humanitarianism in living with animals. Man was not meant to do so. The space taken up by the cattle today would be spared to the farmer and his family, if the collective system were adopted.

(2) As the number of cattle increases, life becomes impossible for the farmer in his home. Hence he is obliged to sell the calves and kill the male buffaloes or else turn them out to starve and die. This inhumanity would be averted if the care of the cattle were undertaken on a co-operative basis.

(3) Collective cattle farming would ensure the supply of veterinary treatment to animals when they are ill. No ordinary farmer can afford this on his own.

(4) Similarly one selected bull can be easily kept for the need of several cows under the collective system. This is impossible otherwise except for charity.

(5) Common grazing ground or land for exercising the animals will be easily available under the co-operative system, whereas today generally there is nothing of the kind for individual farmers.

(6) The expense on fodder will be comparatively far less under the collective system.

(7) The sale of milk at good prices will be greatly facilitated and there will be no need or temptation for the farmer to adulterate it as he does as an individual.

(8) It is impossible to carry out tests of the fitness of every head of cattle individually, but this could easily be done for the cattle of a whole village and would thus make it easier to improve the breed.

(9) The foregoing advantages should be sufficient argument in favour of co-operative cattle farming. The strongest argument in its favour is that the individualistic system has been the means of making our own condition as well as that of our cattle pitiable. We can only save ourselves and them by making this essential change.

I firmly believe too that we shall not derive the full benefits of agriculture until we take to co-operative farming. Does it not stand to reason that it is far better for a hundred families in a village to cultivate their lands collectively and divide the income therefrom than to divide the land anyhow into a hundred portions? And what applies to land applies equally to cattle.

It is quite another matter that it may be difficult to convert people to adopt this way of life straightaway. The straight and narrow road is always hard to traverse. Every step in the programme of cow service is strewn with thorny problems. But only by surmounting difficulties can we hope to make the path easier. My purpose for the time being is to show the great

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superiority of collective cattle farming over the individual effort. I hold further that the latter is wrong and the former only is right. In reality even the individual can only safeguard his independence through co-operation. In cattle farming the individual effort has led to selfishness and inhumanity, whereas the collective effort can abate both the evils, if it does not remove them altogether.

Harijan, 15-2-1942, p. 39

CHAPTER 9

CATTLE PROTECTION

Criminal negligence is the only cause of the miserable condition of our cattle. Our *pinjrapoles*, though they are an answer to our instinct for mercy, are a clumsy demonstration of its execution. Instead of being model dairy-farms and great profitable national institutions, they are merely depots for receiving decrepit cattle.... Whilst professing the religion of cow protection, we have enslaved the cow and her progeny, and have become slaves ourselves.

Young India, 6-10-1921, p. 318

Cow protection societies must turn their attention to the feeding of cattle, prevention of cruelty, preservation of the fast disappearing pasture land, improving the breed of cattle, buying from poor shepherds and turning *pinjrapoles* into model self-supporting dairies.

Young India, 29-5-1924, p. 181

Mother cow is in many ways better than the mother who gave us birth. Our mother gives us milk for a couple of years and then expects us to serve her when we grow

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up. Mother cow expects from us nothing but grass and grain. Our mother often falls ill and expects service from us. Mother cow rarely falls ill. Hers is an unbroken record of service which does not end with her death. Our mother when she dies means expenses of burial or cremation. Mother cow is as useful dead as when she is alive. We can make use of every part of her body— her flesh, her bones, her intestines, her horns, and her skin. Well, I say this not to disparage the mother who gives us birth, but in order to show you the substantial reasons for my worshipping the cow.

Harijan, 15-9-1940, p. 281

Then how can the cow be saved without having to kill her off when she ceases to give the economic quantity of milk or when she becomes otherwise an uneconomic burden? The answer to the question can be summed up as follows:

1. By the Hindus performing their duty towards the cow and her progeny. If they did so, our cattle would be the pride of India and the world. The contrary is the case today.

2. By learning the science of cattle-breeding. Today there is perfect anarchy in this work.

3. By replacing the present cruel method of castration by the humane method practised in the West.

4. By thorough reform of the *pinjrapoles* of India which are today, as a rule, managed ignorantly and without any plan by men who do not know their work.

5. When these primary things are done, it will be found that the Muslims will, of their own accord, recognize the necessity, if only for the sake of their Hindu brethren, of not slaughtering cattle for beef or otherwise.

The reader will observe that behind the foregoing requirements lies one thing and that is Ahimsa. If that supreme thing is realized, everything else becomes easy. Where there is Ahimsa, there is infinite patience, inner calm, discrimination, self-sacrifice and true knowledge. Cow protection is not an easy thing. Much money is wasted in its name. Nevertheless, in the absence of Ahimsa the Hindus have become destroyers instead of saviours of the cow. It is even more difficult than the removal of foreign rule from India.

(Note: The average quantity of milk that the cow in India yields is said to be roughly 2 lbs. per day, that of New Zealand 14 lbs., of England 15 lbs., of Holland 20 lbs. The index figure for health goes up in proportion to the increase in the yield of milk.)

Harijan, 31-8-1947, p. 300

Buffalo Milk

I am amazed at our partiality for buffalo's milk and ghee. Our economics is short-sighted. We look at the immediate gain, but we do not realize that in the last analysis the cow is the more valuable animal. Cow's butter (and ghee) has a naturally yellowish colour which indicates its superiority to buffalo's butter (and ghee) in carotene. It has a flavour all its own. Foreign visitors who come to Sevagram go into raptures over the pure cow's milk they get there. Buffalo's milk and butter are almost unknown in Europe. It is only in India that one finds a prejudice in favour of buffalo's milk and ghee. This has spelt all but extinction of the cow, and that is why I say that, unless we put an exclusive emphasis on the cow, she cannot be saved.

Harijan, 8-2-1942, p. 34

CHAPTER 10

UTILIZATION OF FARMYARD WASTE

[An All India Compost Conference was held in New Delhi in December, 1947, to consider the question of compost development on the widest scale possible. It was presided over by Dr. Rajendra Prasad. Several important resolutions were passed by it on schemes for towns and villages. The resolutions emphasized the necessity of "the agricultural utilization of town sewage, sullage and sludge, the utilization of the by-products of the slaughter house and other trade wastes (for example, wool waste, mill waste, leather waste, etc.) and for the composting of other materials like water-hyacinth, cane-trash, press-mud, forest leaves etc." Referring to these resolutions Gandhiji wrote:]

These resolutions are good and useful if they do not remain merely on paper. The chief thing is whether they would be reduced to practice throughout India. To do so would tax the resources of many Mirabehns. Given the willing co-operation of the masses of India, this country can not only drive out the shortage of food, but can provide India with more than enough. This organic manure ever enriches, never impoverishes the soil. The daily waste, judiciously composted, returns to the soil in the form of golden manure causing a saving of millions of rupees and increasing manifold, the total yield of grains and pulses. In addition, the judicious use of waste keeps the surroundings clean. And cleanliness is not only next to godliness, it promotes health.

Harijan, 28-12-1947, p. 484

The excreta of animals and human beings mixed with refuse can be turned into golden manure, itself a valuable commodity. It increases the productivity of the soil which receives it. Preparation of this manure is itself a village industry. But this, like all village industries, cannot give tangible results unless the crores of India co-operated in reviving them and thus making India prosperous.

Delhi Diary, pp. 270-71, Ed. 1948

CHAPTER 11

NIGHT-SOIL AS MANURE

G. I. Fowler states, in his *Wealth and Waste* that a proper disposal of human excreta would realize Rs. 2 per head per year. In the vast majority of cases, all this rich manure is being wasted and disease invited. He quotes Prof. Brultini, from his volume *The Use of Waste Materials*, who says that "nitrogen derived from the 282,000 residents of Delhi is sufficient to fertilize a minimum of 10,000 and a maximum of 95,000 acres." Because we do not know how to treat our scavengers, Delhi of ancient fame has pestilential spots of which we have to feel ashamed. If we all become scavengers, we would know how to treat ourselves and how to turn what today is poison into rich food for plant life. 30 crores of the population of India should mean, according to Dr. Fowler, an annual gain of 60 crores of rupees to the country, if we would but make a wise use of human excreta.

Harijan, 15-3-1935, p. 36

[After quoting from the bulletin on manure pits published by Mr. Brayne, Commissioner, Rural Reconstruction, Punjab, Gandhiji wrote :]

One can subscribe to all that is said here. I know that the pits such as Mr. Brayne suggests are generally recommended. In my opinion, however, superficial burial recommended by Poore is more scientific and more remunerative. The cost of digging is lessened and that of removal avoided altogether or certainly lessened. Add to this the fact that the excreta are turned into manure in almost a week's time, for the reason that the bacteria, which live within six or nine inches of the surface of the earth, and the air and the rays of the sun, act upon the excreta and turn them into sweet manure much more quickly than when the refuse is buried deep.

But the chief thing to remember is not the various methods of disposing of refuse, so much as the necessity of burying all the refuse for the double purpose of promoting the villagers' health and their material condition, through the better yield of their crops which the manure must produce. It should be remembered that organic rubbish other than excreta must be separately buried. Attention to hygiene is undoubtedly the first step to village reconstruction.

Harijan, 1-3-1935, p. 20

Night-soil Pits

A correspondent asks:

> " (1) What is the length of time that should lapse before a pit one foot deep could be dug in the same place for a second time, for evacuation?
>
> " (2) Usually fields are ploughed immediately after paddy is sown. If night-soil is buried in the fields about a week prior to sowing, will it not come up to the surface when the field is ploughed and thus contaminate the feet of the workmen and of the bulls?"

(1) When superficial burial takes place, according to Poore's formula, seeds may be safely sown after a fortnight's lapse at the most. The same soil will be used for further burial after a year's use.

(2) The question of soiling the feet, whether of human beings or of cattle, can never arise, as nothing can or should be sown without the night-soil being turned into good sweet-smelling manure, which one handles freely without any hesitation.

Harijan, 13-4-1935, p. 72

Night-soil Disposal

[In answer to a village worker's questions Gandhiji wrote:]

Even during the rains villagers should perform functions in places not trodden by man. Faeces must be buried. This is a most difficult question owing to the erroneous training of villagers. In Sindi village we are trying to persuade the villagers not to use the streets, to go to the adjoining fields and to throw dry clean earth on their own evacuations. After two months' continuous labour and co-operation of the municipal councillors and others they have been good enough generally to cease to defile the streets. They go to the fields which their owners have been good enough to open for such use. But the villagers still obstinately refuse to throw earth on their own evacuations. 'Surely it is Bhangi's work; it is sinful to look at faeces, more so to throw earth on them,' they say. They have been taught to believe so. Workers have therefore not to write on a clean slate. They have to rub off what is drawn into the slate with steel points. But I know that if we have faith in our mission, if we have patience enough to persist in the work of daily scavenging and, above all, if we don't get irritated against the villagers, their prejudice will disappear as mist before the rays of the sun. Age-hardened ignorance cannot yield to a few months' object-lessons.

No one has suggested that night-soil may be administered to crops directly as manure. What is meant is that addition of night-soil to earth enriches it after a fixed time. Night-soil after being received into the earth has to undergo certain changes before the earth becomes fit for ploughing and cultivation. The test is infallible. Open up the earth after a stated time where you have buried night-soil. If you find that it is all sweet earth and no smell, no trace of faeces, the soil is fit to receive the seed. I have used night-soil in this manner for all manner of crops for the past thirty years with the greatest benefit.

Harijan, 11-5-1935, p. 100

CHAPTER 12

PREPARATION OF COMPOST MANURE

[There is in Indore an Institute of Plant Industry. It issues from time to time leaflets for those whom it is designed to serve. The first one of these describes the utility and the method of preparing compost manure from farm wastes. As it is valuable for Harijans and village workers who handle cattle-dung and night-soil, I copy below practically the whole of the leaflet incorporating footnotes into the running description of the process.

—M. K. G.]

It has long been recognized that adequate and systematic recuperation of organic matter in Indian soils must be part of any successful scheme for intensive agriculture. It is also equally understood that the available sources of farm yard manure cannot supply the quantities needed, apart from the fact that during the making a large portion of the nitrogen is lost and the final product takes a very long time to attain the lost and most efficient physical condition. Green manuring is perhaps a possible substitute, but under monsoon conditions it is uncertain in most parts of India. The decomposition of green manure in the soil also interferes for the time being with the natural processes of recuperation of available plant food in the soil which play a very substantial part in the maintenance of soil fertility in tropical regions. It is clearly the best course to relieve the soil of the burden of manufacturing humus and enable it to concentrate solely upon the work of recuperation and crop growth. The simplest way of doing this is to prepare humus as a by-product during the routine of farm work, utilizing all agricultural wastes which are not needed as fuel or fodder.

It should be emphasized at this stage that any substitute for farm yard manure must closely resemble humus in its composition, and the Indore method aims at and achieves this. The object of the Indore method thus differs radically from that of processes where the aim is to produce a highly nitrogenous active manure whose special utility is similar to that of artificials.

The work carried out at the Institute of Plant Industry at Indore, which was the final outcome of twenty years' attempts by Mr. Albert Howard in this direction, has now proved definitely that these principles can very easily be put into actual practice. The Indore method of compost making supplies a practical technique and opens new avenues for development. The unlimited resources of natural wastes both from the farm and the towns can thus be tapped for use in agriculture. A copious supply of manure is made possible without having recourse to any unnatural measures such as encroaching upon the use of dung as fuel and the export of oil-cakes, at the same time securing economy in the use of artificials which give their best results when reinforced with organic matter.

The problems and underlying principles involved have been discussed and the elaboration of the Indore method described in the *Utilization of Agricultural Waste* (Howard and Wad, Oxford University Press, 1931). This article gives only a brief working outline of the process as applicable to the Indian cultivator's conditions.

The value of farm yard manure is appreciated in the case of irrigated crops in India, but periodic moderate dressings to fields under dry cultivation are equally essential. The Indore compost method quickly produces larger amounts of richer manure, which is, moreover, actively useful to crops immediately on application, which is not always the case with farm yard manure. Indore compost is ready for use after three months, when properly prepared, and is then a dark-brown or coffee-coloured amorphous substance, containing about 20 per cent of partially decomposed coarse material readily crushed between the fingers, the rest being fine enough when wet (and the colloidal particles therefore swollen) to pass through a sieve of 6 meshes per linear inch. The nitrogen content varies from .8 per cent to 1.0 per cent or more according to the nature of the wastes used. About fifty cartloads of compost per pair of bullocks can easily be made each year by the use of only one-fourth of the fresh dung along with 100 to 125 cartloads of farm wastes of all kinds and half of the quantity of urine-soaked earth which is available from the cattle-shed. The remaining half is also a good manure and can be added directly to fields. If more residues are available, all the dung and urine earth can be utilized to make about 150 cartloads of compost. The cost of making is 8½ annas per cartload of ripe compost at Indore rates of wages (men 7 annas, women 5 annas per day of eight hours).

1. Outline of Indore Method

The main feature of the process is to decompose rapidly a mixture of otherwise useless farm wastes with fresh dung, wood ash and urine earth in pits. The pits should not be deeper than 2 feet and should be 14 feet in breadth. A convenient length is 30 feet. This suits both large and small scale work; for instance, a portion 3 feet in length can be filled in 6 days with bedding from under 2 pairs of bullocks. The adjacent portion is next filled, each being subsequently treated as a separate unit. The material is uniformly moistened with a slurry of water containing small quantities of dung, wood ash, urine earth, and fungus starter from an active pit. Actively decomposing compost soon becomes white with fungus growth. This material is then used to start vigorous decomposition in a fresh charge. For the first time when no starter is available fungus growth is stimulated by the addition of a small quantity of green leaves to the bedding when made. Full activity is attained in the starter after 3 to 4 generations. The activity is then kept up by regulating moisture and air by means of surface waterings and turnings assisted by a second addition of starter, this time taken from a pit more than 30 days old. The mass soon becomes very hot and remains so for a long time. The systematic handling secures a good mixture (as shown by its uniform appearance) and a copious air supply at every stage. Moderate watering begins decomposition at once, which continues without a break to the end, producing a very uniform final product.

2. The Making of Pits

Select a well-drained area near the cattle-shed and if possible near a source of water supply. Dig out one foot of earth and spread it on all sides to make a pit, 30 feet by 14 feet by 2 feet; such pits should be arranged in pairs, the long side being east to west. The distance between two pits in a pair should be six feet and the pairs themselves should be twelve feet apart. The final heaps and monsoon heaps are made on these broad spaces which are also useful for removal of manure by carts directly from each heap.

3. Earth and Urine

The urine passed by cattle is rich in valuable manurial matter and this is mostly wasted in the usual method of making farm yard manure. A pakka-floor in the cattle-shed is both costly and unsuitable for the bullocks. A soft, warm and dry bed on which cattle may rest and sleep can be made cheaply of loose earth. Convenient sources are threshing-floor sweepings, silt from choked drains and earth from silage pits. A flat 6 inches layer is sufficient to absorb all urine without nuisance, if wet patches are scrapped daily and thinly covered by a little fresh earth and with uneaten fodder from the manger over it. This urine earth should be removed and replaced every four months by a fresh layer. The finer portion should be reserved for compost making and the bigger lumps directly added to fields. It is a rapidly acting manure specially suitable as a top-dressing for any irrigated crop.

Harijan, 17-8-1935, pp. 213-15

4. Cow-dung and Ash

Only a quarter of the daily supply of fresh dung is needed; this is applied as liquid ' slurry ', being mixed with water; the rest can be made into fuel if required. Wood ashes from the kitchen and other places should be carefully collected and stored under cover.

5. Farm Wastes or Kuchra

Every type of vegetable waste not otherwise needed on the farm can be made into compost, e. g. weeds, stalks of cotton, pigeon pea, sesamum, safflower, niger, linseed, rape, black and green gram, sugarcane trash, stools of juar, maize and sugarcane, fallen leaves of trees and uneaten residues of grass, straw, juar and other fodders. Hard materials require cracking. This has been successfully done, even on soft unmetalled roads in Sind, by simply spreading such material on a cart track and periodically removing crushed portions and replacing them by unbroken stuff. Very hard residues like stumps and roots require (in addition to cracking) soaking in water for at least two days, or burial with moist earth for two to three months before they can be successfully utilized. The latter can be done easily during the monsoon period. Green materials must be partially dried and then stacked. Small amounts of various kinds of residues should be stacked together, while separate *ganjis*, i. e. stacks, must be made for larger quantities of any single material. At the time of removing to the compost pit care must be taken to get a mixture of all types, no single material ever exceeding 1/3 of the total amount thus removed. The very hard soaked or softened residues should be used only in very small quantities at a time. This is really automatically achieved by the proportions of different residues normally available if they are stored and used in quantities which will ensure a steady supply all round the year. The quality of the compost can be further improved by using for it a kharif-sown catch-crop of *sann* or other legume harvested green, and stacked after withering. The land will be clear in time to sow a *rabi* crop which will also benefit by the *sann* having been grown.

6. Water

It is a saving of labour and an advantage if household waste water is led to a small pit or sunk tub near the compost area and utilized every day. Any kind of water which has long been lying stagnant is harmful. Additional water required must be secured by other means. Between 50 to 60 four-gallon kerosene tins of water are necessary to prepare one cartload of compost according to season.

7. The Process in Detail

Filling the pits with bedding : Take a *pal* or a stretcher made of a piece of gunny sacking 4 feet by 3 feet the longer edges being fastened to two bamboos each 7 feet 6 inches long. Up to one *palful* of farm wastes for each bullock and one and a half *pals* for each buffalo should be spread every day on the floor of the cattle-shed on which the cattle rest and sleep. The material thus gets impregnated with urine as well as mixed and crushed by the animals. The bedding in the rainy season is made by sandwitching a layer of green withered stuff between two of dry wastes specially reserved for the purpose. Fresh dung left over after making the slurry can either be made into *kurdas*, i. e. dried dung cakes, or spread over the bedding in lumps not bigger than a small orange. The portion of the urine earth and fungus starter also left over after making the slurry is then scattered over the bedding next morning when it is removed by spades and *pals* from end to end of the floor to be directly dropped in pits and spread in thin layers by rakes. Every such layer is then moistened uniformly by the slurry containing ash, dung, earth and fungus starter in small amounts. After the removal of all bedding the floor is swept of all finer portions which are then added to the pit as a surface layer. The top layer is wetted by sprinkled water and soaking is completed by further sprinklings in the evening and next morning. A pit, or a portion of it according to the quantity of waste material available, must be filled to the top in six days. A fresh charge in another portion or pit should then be begun. Trampling while charging is *harmful* as air is excluded.

During the monsoon rains the pits get full of water. When the rains begin the contents should be removed and heaped on ground level taking advantage of the routine turnings. During the rains fresh compost should be made on the ground in heaps 8 feet by 8 feet by 2 feet with vertical sides, and closely grouped together on the broad spaces so that they are protected from cold winds.

8. Turning and Watering of Compost

The surface of the decomposing compost is kept moist by weekly sprinkling of water. It is necessary to restore moisture and air in the interior at intervals and hence 3 turns have to be given, accompanied by watering to make up for lost moisture. In wet weather the quantity of these waterings may be lessened or no water may be added, but the water during the first filling or stacking must be added in all seasons.

9. First Turn after about 15 Days

Remove the undecomposed surface layer from the whole pit and use it as part filling for a fresh pit. Scatter compost about 30 days old over the exposed surface and sprinkle water over the top till well moistened for about six inches. During this first turning the pit is divided lengthwise and the half on the windward side is left undisturbed. The other half is then thrown over it (a wooden rake is convenient for this). The material should not be taken off layer after layer but as far as possible from the top to the bottom of the pit by a vertical or slanting stroke. Every layer of the turned material, about six inches thick, must be soaked with sprinkled water. In the monsoon the whole heap may be turned to avoid too much height.

10. Second Turn after One Month

The material in one half of the pit is simply raked as above on to the other vacant side of the pit with adequate watering, the same care to mix it from top to bottom being taken.

11. Third Turn at the End of Two Months

The compost is similarly transferred by shovels to the surface on the broad spaces and watered. The material from two pits can be conveniently shovelled on to the space between to make one heap 10 feet broad and 3½ feet high; the length is immaterial and several pits or heaps can thus be stored together. If convenient the manure after moistening well may be directly carted from pits to the field. The heap should be made on the spot where the product is to be used, thus saving valuable time at the sowing season. All heaps should be dressed to vertical sides and flat tops to prevent excessive drying which stops decomposition.

Good compost gives no smell at any stage and the appearance is uniform throughout. If smell or flies appear it is a sign that more air is wanted and the pit should therefore be turned and a little ash and dung added.

The quantities required in individual cases can easily be found out by simple calculations with the help of the following data :

12. Quantities Required for 40 Animals

Filling into pits every day for six days :

Bedding and sweepings removed to the pit in one day; 40 to 50 *pals* after scattering on it 4 *tagaris* i.e. sheet iron basins being 18 inches diameter by 6 inches depth, of fungus starter, 15 of urine earth and excess of dung if not used as fuel.

Slurry : For one day's output from cattle-shed 20 kerosene tins (4 gallons) of water, 5 *tagaris* of dung, 1 *tagari* of ash, 1 *tagari* of urine earth, and 2 *tagaris* of fungus starter.

Water : For one day's output from cattle-shed 6 tins immediately after filling, 10 tins in the evening and 6 next morning.

Surface waterings : 25 tins each time.

Water at turning time : 1st turn 60 to 100 tins, 2nd turn 40 to 60 tins, 3rd turn 40 to 80 tins according to season.

Fungus starter at the time of 1st turn : 12 *tagaris*...

Table

Volume (in double handfuls) and weights (in lb.) of the contents of a *tagari* or basket.

Material	Volume in double-handfuls	Weight in lb.
Fresh dung	6 to 7	40
Urine earth	20 to 21	22
Wood ashes	15	20
Fungus starter	5	20
For 1st turn starter	6	20

Time Table of Operations

Days	Events
1	Filling begins
6	Filling ends
10	Fungus established
12	First watering
15 16	First turn and addition of one month old compost
24	Second watering
30 32	Second turn
38	Third watering
45	Fourth watering
60	Third turn
67	Fifth watering
75	Sixth watering
90	Compost ready for use

When circumstances do not permit the adoption of the Indore process in full detail its advantages may be partially secured in the following way:

The mixed waste is used as bedding for cattle and the requisite amounts of dung, urine earth and ash scattered over it next morning before removal as already described. The material is then carried to the margin of a field where the manure is to be used, or to some other suitable well-drained place, and stored in heaps not more than 3 feet high and 8 feet broad, and of any convenient length. After the rains have set in the fungus will establish itself in about a month. One full turn is then given choosing a cloudy or moderately rainy day. Another turn or two after an interval of a month will cause the material to rot by the end of the season, given a favourable distribution of rainfall.

A year of waiting is, of course, necessary before the manure is ready and possibly longer if the rains fail seriously.

The resulting manure, though probably rather inferior to compost made in the standard way, will be undoubtedly better than ordinary farm yard manure, for even by this modified process hard, woody waste can be rotted easily, thus giving a far larger quantity of manure than is produced in existing village practice.

Harijan, 24-8-1935, pp. 218-19, 224

CHAPTER 13

VILLAGE DIET

Polished *V.* Unpolished Rice

If rice can be pounded in the villages after the old fashion the wages will fill the pockets of the rice-pounding sisters and the rice-eating millions will get some sustenance from the unpolished rice instead of pure starch which the polished rice provides. Human greed, which takes no count of the health or the wealth of the people who come under its heels, is responsible for the hideous rice-mills one sees in all the rice-producing tracts. If public opinion was strong, it will make rice-mills an impossibility by simply insisting on unpolished rice and appealing to the owners of rice-mills to stop a traffic that undermines the health of a whole nation and robs the poor people of an honest means of livelihood.

Harijan, 26-10-1934, p. 292

Whole-wheat Flour

That branless (wheet) flour is as bad as polished rice is the universal testimony of medical men. Whole-wheat flour ground in one's own *chakki* is any day superior to, and cheaper than, the fine flour to be had in the bazars. It is cheaper because the cost of grinding is saved. Again, in the whole-wheat flour there is no loss of weight. In fine flour there is loss of weight. The richest part of wheat is contained in its bran. There is a terrible loss of nutrition when the bran of wheat is removed. The villagers and others who eat whole-wheat flour ground in their own *chakkis* save their money and, what is more important, their health. A large part of the millions that flour-mills make will remain in and circulate among the deserving poor when village grinding is revived.

Harijan, 1-2-1935, p. 408

Gur

According to the medical testimony . . . *Gur* is any day superior to refined sugar in good value, and if the villagers cease to make *Gur* as they are beginning to do, they will be deprived of an important food adjunct for their children. They may do without *Gur* themselves, but their children cannot without undermining their stamina. . . . Retention of *Gur* and its use by the people in general means several crores of rupees retained by the villagers.

Harijan, 1-2-1935, p. 408

Green Leaves

Take up any modern text-book on food or vitamins, and you would find in it a strong recommendation to take a few edible green leaves uncooked at every meal. Of course, these should always be well washed half a dozen times to remove all dirt. These leaves are to be had in every village for the trouble of picking. And yet greens are supposed to be only a delicacy of cities. Villagers in many parts of India live on *dal* and rice or *roti*, and plenty of chillies, which harm the system. Since the economic re-organization of villages has been commenced with food reform, it is necessary to find out the simplest and cheapest foods that would enable villagers to regain lost health. The addition of green leaves to their meals will enable villagers to avoid many diseases from which they are now suffering. The villagers' food is deficient in vitamins; many of them can be supplied by fresh green leaves. An eminent English doctor told me in Delhi that a proper use of green leaves was calculated to revolutionize the customary notions of food and that much of what was today being supplied by milk might be supplied by green leaves. That, of course, means elaborate research and examination in detail of the nourishing properties of the innumerable leaves that are to be found hidden among the grasses that grow wild in India.

* * *

I had introduced to me the leaves of *sarsav*, *suva* turnip-tops, carrot-tops, radish-tops and pea-plant leaves. Besides these, it is hardly necessary to state that the radish, turnip and carrot tubers are also known to be edible in their raw state. It is waste of money and 'good' taste to cook these leaves or tubers. The vitamins contained in these vegetables are wholly or partially lost in cooking. I have called cooking these waste of 'good' taste, because the uncooked vegetables have a natural good taste of their own which is destroyed by cooking.

Harijan, 15-2-1935, p. 1-2

The unlimited capacity of the plant world to sustain man at his highest is a region yet unexplored by modern medical science which through force of habit pins its faith on the shambles or at least milk and its by-products. It is a duty which awaits discharge by Indian medical men whose tradition is vegetarian. The fast-developing researches about vitamins and the possibility of getting the most important of them directly from the sun bids fair to revolutionize many of the accepted theories and beliefs propounded by the medical science about food.

Young India, 18-7-1929, p. 236-37

CHAPTER 14

SOYA BEAN CULTIVATION

It should be remembered that soya beans are a most nutritious diet. It stands at the top of all the known articles of diet because of its low percentage of carbohydrates and high percentage of salts, protein and fat. Its energy value is 2,100 calories per lb. against 1,750 of wheat and 1,530 of gram. It contains 40 per cent of protein and 20.3 per cent of fat against 19 and 4.3 respectively of gram and 14.8 and 10.5 of eggs. Therefore no one should take soya beans in addition to the usual protein and fatty foods. The quantity, therefore, of wheat and ghee should be reduced and *dal* omitted altogether, soya beans being themselves a highly nutritious *dal*.

Harijan, 19-10-1935, p. 287

Inquiries are being made as to where soya beans are to be had and how they are to be sown and in what ways they are to be cooked. I give below a free translation of the main parts of a Gujarati leaflet published by the Baroda State Food Survey Office. Its cost is one pice:

> "Soya beans grow on a plant from one foot to fifteen inches in height. Every pod has on an average three beans. The plant has many varieties. The bean may be white, yellow, blackish, variegated, etc. The yellow variety has the largest percentage of protein and fat. This variety is more nutritious than meat or eggs. The Chinese eat beans with rice. Soya bean flour may be mixed with ordinary flour in the proportion of 1 to 5 parts of wheat and turned into *chapatis*.
>
> Soya bean crop improves the soil. Instead of deriving nitrogen like other plants from the soil, soya bean derives it from the air and thus enriches the soil.
>
> Soya bean grows in practically all soils. It thrives most in soils favourable to cotton or grain crops. Salt soil improves if soya bean is sown in it. In such soil more manure should be used. Fermented cow dung, grass, leaves and dung heap manure are quite serviceable for this crop.
>
> Temperate climate suits the bean. It thrives where the rainfall is not more than 40 inches. It should not be sown in water-logged soil. The bean is generally sown after the first rains, but it can be sown during any season. In the dry season it requires to be watered once a week, or twice if the soil is inclined to dry quickly.
>
> The soil is best prepared in summer. It should be ploughed up and exposed to the sun's rays. Then the clods should be broken up and pulverized.

The seed should be sown in rows twenty-four to thirty-six inches apart. The plants should be three to four inches apart in their rows. There should be frequent weeding.

One acre would take from 20 to 30 lb. of seeds. They should not be sown deeper than two inches. One acre will require about 10 cartloads of manure.

After the sprouting of the seeds there should be proper weeding with a light plough. All crust should be broken up.

The pods are ready for picking in 120 days after sowing. They should be picked as soon as the leaves begin to turn yellow and drop off. They should not be allowed to be on the plants till they open, or else the seeds will drop out and be lost in the soil."

Harijan, 9-11-1935, p. 312

CHAPTER 15

IN PRAISE OF GROUNDNUT CAKE

A friend sends the following opinion of Prof. D. L. Sahasrabuddhe, in praise of groundnut cake. It certainly deserves a trial.

There is a good deal of preaching done to encourage the use of soya beans as a food material, while groundnut which is extensively grown in India is not given the consideration it deserves. Groundnut is a very valuable oilseed and food material. Groundnut itself is not easy for digestion and many times causes digestive disturbances. This is, however, due to the presence of a very high proportion of oil — 50 per cent. If the oil is extracted from well cleaned seed, the oil-cake left behind is a highly nutritious food material for human consumption and does not cause any trouble. The following is the average analysis of groundnut cake and soya beans:

	Groundnut cake per cent	Soya beans per cent
Moisture	8	8
Proteids	49	43
Carbohydrates	24	19.5
Fat	10	20
Fibre	4	5
Mineral matter	5	4.5

The groundnut cake compares very favourably with the soya beans. It is actually better than soya beans in the essential constituents, namely the proteids and mineral matter. Further, the groundnut proteid is better than soya bean proteid in essential amino-acids as shown by the following figures:

Essential Amino-acids	Groundnut Proteids per cent	Soya bean Proteids per cent
Tyrodine	5.5	1.86
Agrinine	13.5	5.12
Histidine	1.88	1.39
Lysine	5.50	2.71
Eystine	0.85	—

If at all any biliousness is caused by groundnut cake, use of a small quantity of jaggery or a little soda bi-carb will be a good preventive.

The groundnut cake has a very good taste and its keeping quality can be improved by heating and keeping the cake in a properly closed vessel.

Sweets and ordinary articles of food can be prepared from groundnut cake. Attempts must, therefore, be made to spread the knowledge about the usefulness of groundnut cake. It is certainly equal to and even better than soya beans.

Harijan, 14-12-1935, p. 347

CHAPTER 16

AHIMSA IN DIET

Q. You ask people not to eat polished rice but I fear the disease is too far gone. Polished rice is washed again and again and the water thrown away. It is then boiled and that water too is emptied into the drain thus depriving the cereal of all its vitamin value. The rice thus served, with each grain separate, is pleasant for both the eye and the palate. The practice obtains even in students' hostels. How are we to get rid of it?

A. I am aware of the above-mentioned malpractice. We live in the poorest of poor countries and yet are unable or unwilling to give up such harmful habits. Each one thinks only of himself. We look upon our neighbour as strangers instead of as our kith and kin. What does it matter to us whether they live or die? If they die it is their own fault. If they live it is accredited to their merit. Life and death are not in our hands. Therefore, let us eat, drink and be merry!

In such a distorted view of life we have to follow what we consider to be our duty and believe that what is true will one day be followed. Until then, whenever occasion arises we must proclaim from the housetops what we consider to be right.

BANGALORE-1.

Q. You say that those who eat fish should be provided with the same. Does not this entail violence both for him who eats and him who provides the fish?

A. Both commit violence. So do those who eat vegetables. This kind of violence is inherent in all embodied life, therefore, in man too. It is in this condition and in spite of it that we have to practise non-violence as a duty. I have often indicated how we may do so. The man who coerces another not to eat fish commits more violence than he who eats it. Fishermen, fish vendors, and fish eaters are probably unaware of any violence in their action. Even if they were they might look upon it as unavoidable. But the man who uses coercion is guilty of deliberate violence. Coercion is inhuman. Those who quarrel among themselves, those who will stoop to anything in order to amass wealth, those who exploit or indulge in forced human labour, those who overload or goad or otherwise torture animals, all these knowingly commit such violence as can easily be stopped. I do not consider it violence to permit the fish eater to eat fish. It is my duty to suffer it. Ahimsa is the highest duty. Even if we cannot practise it in full, we must try to understand its spirit and refrain as far as is humanly possible from violence.

Harijan, 24-3-1946, p. 53

GANDHI SMARAKA GRANTHALAYA
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CHAPTER 17

NEED FOR A NATIONAL DIET

I believe that we should be able to accommodate ourselves to the food eaten in the provinces other than our own. I know that this is not so simple a question as it appears. I know southerners who have made a herculean effort to take to Gujarati food and failed. Gujaratis will not take to the southern mode of cooking. Bengal produces dainties which the other provinces will not easily relish. If we would be national instead of provincial, we would have to have an interchange of habits as to food, simplify our tastes and produce healthy dishes all can take with impunity. This means a careful study of the foods taken by different provinces, castes and denominations. Unfortunately, or fortunately, there are not only different combinations in different provinces, but there are different styles in the same province, among the different communities. It is necessary, therefore, for national workers to study the foods and the methods of preparing them in the various provinces and discover common, simple and cheap dishes which all can take without upsetting the digestive apparatus. In any case, it must be a matter of shame for workers not to know the manners and customs of different provinces and communities.... What can and should be aimed at are common dishes for common people. This I know is easily possible if we have the mind. But to make this possible, volunteers will have to learn the art of cooking and for this purpose they will have also to study the values of different foods and evolve common dishes easily and cheaply prepared.

Harijan, 5-1-1934, p. 4

CHAPTER 18

HINTS ON AGRICULTURAL DEVELOPMENT

[The following excerpts are taken from Prof. J. C. Kumarappa's notes. —M. K. G.]

Co-operative Societies: Co-operative societies are ideally suited organizations, not only for developing village industries, but also for promoting group efforts by the villagers. A multi-purpose village society can serve a very useful purpose in a variety of ways such as:

1. Stocking of raw materials for industries, and food grains needed by the village people.
2. Marketing of village products and distributing the requirements of the people.
3. Distribution of seeds, improved implements and tools, manures such as bonemeal, flesh or fish manure, oilcakes, green manure, seeds etc.
4. To maintain a common stud bull for the area.
5. To stand between the Government and the people in the matter of collection and payment of taxes, etc.

Much of the wastage caused to food grains in transport and handling, and the expenses of collecting food grains to a central place and redistributing them again to the villages can be eliminated through the agency of a co-operative society which is a very reliable medium both from the government as well as from the public point of view. If stocks of grain are held by co-operative societies in villages, the remuneration of local officials can be conveniently paid partly in kind and this may facilitate the much desired system of collecting revenue also in kind.

Agriculture: The production of crops should be controlled keeping two considerations in mind: (1) The locality must try to produce its own food requirements and raw materials required for primary necessities of life in preference to commercial crops. (2) It must try to produce raw materials suitable for village industries rather than for factories, for example, instead of growing thick-rinded sugar-cane or long-staple cotton as demanded by factories, soft-rinded sugar-cane as can be crushed by village *kolhus* for *gur*-making and short-staple cotton as required for hand-spinning should be grown. The surplus land can be utilized to supplement crops needed by surrounding districts. Land utilized for sugar-cane of the factory requirements, tobacco, jute and other money crops should be eliminated or reduced to the minimum. In order to make the farmers adopt this policy, heavy dues or excess land revenue should be levied on land used to raise money crops and that too after a licence has been obtained. This will give the farmers no incentive to go in for money crops in preference. On the whole the prices of the agricultural products should be made to compare favourably with those of industrial products.

Commercial crops such as tobacco, jute, sugar-cane, etc. are doubly wasteful. They reduce the food production for man as well as for animals which would otherwise have got their fodder from food crops.

The supply of *gur* which may be reduced with the decline of sugar-cane crops of the factory varieties can be made good by the production of *gur* from palm trees now tapped for toddy or from those which are found or can be grown in waste lands in sufficient numbers as practically to meet our demand in this respect. The best land put under sugar-cane today can then be utilized for the production of cereals, fruits and vegetables which India needs so badly today.

Irrigation: The need for providing irrigation facilities to all the villages cannot be emphasized too greatly. This is the foundation upon which agriculture depends for its progress, in the absence of which it remains a gamble. A drive for sinking wells, enlarging and dredging tanks and building canals has to be launched. The power engines used in rice and flour mills now can be acquired by the Governments to pump up water from tube wells. No proper manuring can be done without water facilities, as manure in the absence of water is harmful.

Harijan, 12-5-1946, p. 127

Manure: Much of the waste of the village including sweepings, bones, human excreta etc. that go to spoil the sanitation of the village at present could be utilized into making compost manure which is very easily done and which is as good a manure as cow dung. Bones and oil cakes which are usually exported out of the country should not be allowed to leave the villages. The bones must be crushed locally with the help of *chunam chakkis* after being charred a little in the *chunam bhattis* and the meal distributed amongst the farmers.

Manure-making in villages may be given out on subsidized contract. This will not only ensure the cleanliness of the village but it will also raise the sweepers engaged in making compost and manure to the level of traders.

Oil mills which take away the oil-seeds from the villages and give only oil in return, sending the cake abroad, are depriving the land of a valuable form of fertilizer. This must be stopped altogether. This is one of the fundamental reasons why oil-seeds should not be allowed to go out of the villages, but should be crushed in the local country *ghanis*. This will retain both the oil and the cake in the village and be a source of enrichment to men, cattle and the land.

In the name of increasing the fertility of the soil, much attempt is being made to introduce chemical fertilizers into our agriculture. The experience gained through the use of such chemical fertilizers throughout the world is clear enough to guide us against the inroads to be made by these fertilizers. They do not add to the fertility of the soil, but act as stimulants or drugs resulting in immediate bumper crops and in the end bring about a corresponding exhaustion of the land. They also destroy a host of earth worms so essential for agriculture. In the long run such artificial fertilizers prove to be most injurious to the land. Behind the trumpeting of chemical fertilizers lies the anxiety of the fertilizer factory owners to push the sale of their products irrespective of the harm or injury they do to agriculture.

Land Management : Besides increasing the bulk of the manures, the fertility of the soil should be maintained by stopping erosion by means of proper drainage, embankments etc. In the final analysis fertility of the soil is the fountain head from which springs all nourishment for cattle and men in the form of fodder and corn. If the fertility of the soil is reduced, the food produced on it will be of poor quality and consequently the health of the people will suffer. This is why nutrition experts connect up health with agriculture.

Seeds: Selected and improved varieties of seeds are essential for the improvement of agriculture. What is wanted in this regard is the machinery for effective distribution of seeds. There can be no better medium for this than co-operative societies.

Research: All research in agriculture should be directed towards improving food crops as well as raw materials for village industries rather than money crops such as tobacco and raw materials for factories, e.g. thick rinded sugar-cane and long-staple cotton.

Distribution of Land for the Production of Balanced Diet: The food question, which has assumed serious proportions now, does not promise an immediate solution. The problem is two-fold. The immediate is a caloric shortage and secondly, there is the long standing shortage of protective foods. The first problem may find an easy solution but the second one is going to present difficulties.

It is ordinarily presumed that an acre of land provides more calories through the production of grains than through any other food. But apart from the question of calories, grains are very poor suppliers of protective food factors. Therefore, if we aim at getting these factors from cereals only, huge quantities of grains will be required. On the other hand, if the grains are substituted and supplemented by foods like fruits and vegetables, nuts, oil-seeds, etc., the protective food factors required to make up a balanced diet may be obtained through lesser quantities of these types of food than through grains alone. Even the supply of calories per acre is greater in the case of some of the root vegetables like potatoes than in the case of cereal grains. Thus a balanced diet may be a double blessing and may offer the solution to our problem. It reduces the per capita requirement of land and at the same time supplies the body with all its requirements in their correct proportions, so as to keep it fit and healthy. It is calculated that the per capita land available in India at present for food cultivation comes to about 0.7 acre. This very land which is found to be too inadequate to meet our requirements in food according to the present distribution of cultivation becomes more than sufficient as only 0.4 acre is the estimated figure required for a balanced diet in the re-ordered system of agriculture. The land of the locality should be so divided for the purpose of growing crops as to provide its population with the materials for a balanced diet rather than merely supplying the cereals for a grain diet as at present. This aspect of the question should be thoroughly investigated and a definite plan chalked out.

Rice: 1. All rice mills should be disbanded as in Travancore.

2. All the hullers used for polishing rice should be completely banned.

3. People should be educated about the better nutritive value of whole unpolished rice and about the method of cooking it by practical demonstration and film shows. Polishing of rice should be prohibited or its degree of polishing should be very strictly controlled.

4. Where the paddy husking industry is carried on an industrial scale for business purposes, in predominantly paddy growing areas, costly equipment such as paddy separators, winnowers etc. should be

supplied on hire to a group of artisans through their co-operative society.

5. In view of the fact that the use of unpolished rice is to be advocated and popularized, the movement of paddy from one place to another will become necessary, and in order that the freight on the extra weight of the paddy may not enhance the price of rice, the freight charges on paddy should be favourably discriminated.

6. In areas where the implements for dehusking paddy and polishing rice are not separate, but both the processes are combined into one of pounding paddy, the resultant product is polished rice. In such cases, dehusking implements, i.e. *chakkis* either of wood, stone or mud, should be introduced, and can even be supplied along with the equipment for other industries through the district demonstration centres. As far as possible the use of rice polishing implements should be discouraged and even a tax may be levied on them to restrict their number. The degree of polishing rice under these licensed polishing implements should also be supervised and controlled. Paddy and other grains and seeds required by the village should be stocked in the village itself, and only the surplus should be sent out. The best agency for all such activities can be the multi-purpose co-operative society.

Grain Storage: If storage arrangements are made locally all the wastage through bad storage etc. and conveyance charges will be eliminated. Big towns and cities where proportionately larger stocks of grain are to be held can build *pucca* cement godowns after the model of the godowns at Muzaffarnagar, U.P. These can be built either by the municipality or by private people to be rented out for grain storage. These godowns should be licensed and subjected to periodical inspection, like boilers are at present. An enormous loss of grain occurs through bad storage alone. Such loss is estimated on a conservative basis to be about 3.5 million tons, an amount equal to the declared deficit of grains in India during the current year. The qualitative loss caused by insects, rodents, dampness etc. — all caused by bad storage arrangements —, resulting in all kinds of diseases, is equally enormous. The storage problem is both an urgent and a permanent one and should be tackled in all earnestness and seriousness. In any case, holding stocks in ill-protected godowns, as at present, should be stopped.

If the stocks are held in the villages where they are produced, and all their movements to town and back to villages are eliminated, the chances of their getting damaged are, of course, reduced. Local storage will go a long way towards eradicating black-marketing and is likely to stabilize prices besides removing much of the inconvenience caused to villages in obtaining rations from cities.

Individual holders of stock should be educated in methods for the preservation of grain.

Harijan, 19-5-1946, pp. 138-39

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